

**Why we are proposing a Biomass Boiler addition to the UM Heating Plant**

- The Climate Action Plan has identified the Heating Plant as producing 32% of the greenhouse gas emissions (GHG) on the Missoula Campus. This project will reduce natural gas usage by 70% and the overall GHG emissions by 22% by using a renewable fuel to replace fossil fuel.
- Woody biomass is abundant in Western Montana and is low cost per unit of heat delivered.
- The State of Montana and Federal Government is encouraging the use of sustainable alternative fuels for fossil fuel replacement and job creation.

**Fuel**

- The wood fuel will be purchased from local suppliers and be composed mostly of logging and mill residues.
- Approximately 15,700 bone dry tons per year are needed.
- This is about 2% of the wood amount formerly used by Smurfit-Stone each year.

**Fuel Delivery and storage**

- Two truckloads per day are anticipated from mid-November to Early April. The boiler will be shut down from mid-June to early September; no summer fuel deliveries are anticipated.
- The biomass wood grindings and chips will be delivered in enclosed self-unloading trailers having 22 to 30 ton capacities. Similar sized trucks currently deliver supplies to the University Center and Campus Stores. Chip vans will not be used.
- The wood will be stored inside an enclosed building at the proposed boiler location. Dust, dirt and noise will be minimized as a design objective.
- 

**Air Quality**

- The boiler is located in a non-attainment area for particulate matter.
- An air quality permit from the State and/or Missoula County meeting the Montana Environmental Policy Act must be issued prior to construction.
- The Best Available Control Technology (BACT) analysis will be used to determine the equipment needed to maintain air quality.
- The Nexterra Systems Corp. combustion system has a much lower emission level than alternative wood fired system investigated. Burning woody biomass in a controlled boiler is a preferred method to reduce emission compared to burning logging residues in slash piles.
- The proposed system will discharge an estimated 1.7 tons per year of particulate material. Existing residential wood stove in Missoula produce and estimated 254 tons of particulate a year, wild fires and prescribed burns produce much more annually.

**Education opportunities**

- A classroom for COT operations and maintenance classes will be incorporated providing students onsite training with advanced boiler controls and technology.
- The school of Forestry and Conservation will investigate sustainable harvest at Lubrecht Experimental Forest as a potential woody biomass supply for campus.

## **Additional resources on the web:**

### **Learn more -Fuels**

<http://dnrc.mt.gov/Forestry/Assistance/biomass/default.asp>

<http://www.bber.umt.edu/forest/Biomass.asp>

<http://dnrc.mt.gov/forestry/Assistance/Biomass/WorkingGroup.asp>

### **Learn more –Air quality**

<http://www.co.missoula.mt.us/airquality/>

<http://www.deq.mt.gov/AirQuality/aqinfo.mcpix>

<http://www.epa.gov/ebtpages/air.html>

### **Technology**

<http://www.nexterra.ca/technology/index.cfm> (Boiler)

<http://www.cleanair-coolplanet.org/toolkit/> (GHG calculations for campuses)

### **Definitions:**

Greenhouse gas emissions (GHG) are gases in an atmosphere that absorbs and emits radiation within the thermal infrared range and results in climate change. There are many gases that affect the climate, their affect is measured in equivalents of carbon dioxide (CO<sub>2</sub>e).

Carbon Footprint is the amount of GHG from a facility.

Woody Biomass is the wood fuel derived from the refuse of logging, lumber milling and forest thinning activities. This material contains no paint, wood treatment or non-forest derived materials. It is considered part of the current carbon cycle and can be used as a replacement for fossil fuels to reduce the long term amount of GHG in the atmosphere.

Particulate material is airborne particles from combustion and other dust creating activities. It is classified by size, air quality regulations address the health effects of particles 10 micron and less and 2.5 micron and less.